



U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Pesticide Programs
Biopesticides and Pollution Prevention Division (7511P)
1200 Pennsylvania Ave., N.W.
Washington, D.C. 20460

EPA Reg. Number:

82074-10

Date of Issuance:

6/29/2016

NOTICE OF PESTICIDE:

Registration
 Reregistration
(under FIFRA, as amended)

Term of Issuance:

Unconditional

Name of Pesticide Product:

XPULSE

Name and Address of Registrant (include ZIP Code):

LAM International Corporation
117 South Parkmont
Butte, MT 59701

Note: Changes in labeling differing in substance from that accepted in connection with this registration must be submitted to and accepted by the Biopesticides and Pollution Prevention Division prior to use of the label in commerce. In any correspondence on this product, always refer to the above EPA Registration Number.

On the basis of information furnished by the registrant, the above named pesticide is hereby registered under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA or the Act).

Registration is in no way to be construed as an endorsement or recommendation of this product by the U.S. Environmental Protection Agency (EPA). In order to protect health and the environment, the Administrator, on his or her motion, may at any time suspend or cancel the registration of a pesticide in accordance with the Act. The acceptance of any name in connection with the registration of a product under the Act is not to be construed as giving the registrant a right to exclusive use of the name or to its use if it has been covered by others.

This product is unconditionally registered in accordance with FIFRA section 3(c)(5) provided that you:

1. Submit and/or cite all data required for registration or registration review of your product when the EPA requires all registrants of similar products to submit such data.
2. Submit storage stability and corrosion characteristics data (Guidelines 830.6317 and 830.6320) as these data requirements are not satisfied. A one-year study is required to satisfy these data requirements. You have 18 months from the date of this registration to provide these data to the EPA.

Signature of Approving Official:

Alan Reynolds, Team Leader
Microbial Pesticides Branch
Biopesticides and Pollution Prevention Division (7511P)

Date:

6/29/2016

3. Make the following labeling change before you release this product for shipment:
 - Revise the EPA Registration Number to read, “EPA Reg. No. 82074-10.”
4. Submit one (1) copy of the final printed labeling for the record before you release this product for shipment.

Should you wish to add/retain a reference to your company’s website on your label, then please be aware that the website becomes labeling under FIFRA and is subject to review by the EPA. If the website is false or misleading, the product will be considered to be misbranded and sale or distribution of the product is unlawful under FIFRA section 12(a)(1)(E). 40 CFR § 156.10(a)(5) lists examples of statements the EPA may consider false or misleading. In addition, regardless of whether a website is referenced on your product’s label, claims made on the website may not substantially differ from those claims approved through the registration process. Therefore, should the EPA find or if it is brought to our attention that a website contains false or misleading statements or claims substantially differing from the EPA-approved registration, the website will be referred to the EPA’s Office of Enforcement and Compliance Assurance.

Your release for shipment of this product constitutes acceptance of these terms. If these terms are not complied with, this registration will be subject to cancellation in accordance with FIFRA section 6. A stamped copy of the labeling is enclosed for your records. Please also note that the record for this product currently contains the following acceptable Confidential Statement of Formula (CSF):

- Basic CSF dated 06/29/2016

Any CSFs other than those listed above are superseded.

If you have any questions, please contact Susanne Cerrelli of my team by phone at (703) 308-8077 or via email at cerrelli.susanne@epa.gov.

Sincerely,



Alan Reynolds, Team Leader
Microbial Pesticides Branch
Biopesticides and Pollution
Prevention Division (7511P)
Office of Pesticide Programs

Enclosure



Active Ingredients: *Beauveria bassiana* Strain GHA* 0.06%
 Cold Pressed Neem Oil** 10.00%
Other Ingredients*:** 89.94%
Total: 100.00%

* Contains not less than 1x10⁸ viable spores / ml (1x10¹¹ viable spores / quart)
 ** Contains Azadirachtin at 375 ppm.
 *** Contains petroleum distillates.

ACCEPTED
 06/29/2016
 Under the Federal Insecticide, Fungicide
 and Rodenticide Act as amended, for the
 pesticide registered under
 EPA Reg. No. 82074-10

**KEEP OUT OF REACH OF CHILDREN
 DANGER PELIGRO**

Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle. If you do not understand the label, find someone to explain it to you in detail.

FIRST AID	
If in eyes	<ul style="list-style-type: none"> • Hold eye open and rinse slowly and gently with water for 15 – 20 minutes. • Remove contact lenses, if present, after the first 5 minutes, then continue rinsing. • Call poison control center or doctor for treatment advice.
If Swallowed	<ul style="list-style-type: none"> • Immediately call a poison control center or doctor. • Do not induce vomiting unless told to by a poison control center or doctor. • Do not give any liquid to the person. Do not give anything by mouth to an unconscious person.
If Inhaled	<ul style="list-style-type: none"> • Move person to fresh air. • If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. • Call a poison control center or doctor for further treatment advice
If on skin or clothing	<ul style="list-style-type: none"> • Take off contaminated clothing. • Rinse skin immediately with plenty of water for 15 – 20 minutes. • Call a poison control center or doctor for treatment advice.
HOT LINE NUMBER	
Have the product container or label with you when calling a poison control center, doctor, or going for treatment. For non-emergency information concerning this product, call the National Pesticides Information Center (NPIC) at 1-800-858-7378 NOTE TO PHYSICIAN: Contains petroleum distillate. Vomiting may cause aspiration pneumonia. Probable mucosal damage may contraindicate the use of gastric lavage.	

See additional precautionary statements in attached booklet.

Store between 40°F and 85°F - SHAKE WELL

LAM INTERNATIONAL CORPORATION

117 S. Parkmont; P.O. Box 4109-Butte, MT 59702; Ph: (406)782-2386; Fax: (406)782-9912
 EPA Reg. No. (Pending as File Symbol 82074-RN) EPA Est. Number 65626-MT-02

Edition:

Net Contents: 1 Quart 1 Gallon 2 Gallon
 2.5 Gallon 5 Gallon 15 Gallon
 250 Gallon Tote

Lot No.:

Expiration Date: (6 months
 from the date of
 manufacture)

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER: Corrosive. Causes irreversible eye damage. Do not get in eyes or on clothing. Wear goggles, face shield, or shielded safety glasses. Wash thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco or using the toilet. Remove and wash contaminated clothing before reuse. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Applicators and other handlers must wear:

- Protective eyewear
- Long-sleeved shirt and long pants
- Chemical resistant gloves (nitrile or barrier laminate)
- Shoes plus socks

Mixers/loaders and applicators not in enclosed cabs or aircraft must wear a NIOSH approved particulate respirator with any R, or P filter with NIOSH approval number prefix TC-84A; or a NIOSH approved powered air purifying respirator with an HE filter with NIOSH approval number prefix TC-21C. Repeated exposure to high concentrations of microbial proteins can cause allergic sensitization. Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.

ENGINEERING CONTROLS

When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides (40 CFR 170.240(d)(4-6), the handler PPE requirements may be reduced or modified as specified in the WPS. Pilots must use an enclosed cockpit that meets the requirements listed in the WPS for agricultural pesticides [40 CFR 170.240(d)(6)]. Human flagging is prohibited. Flagging to support aerial application is limited to use of the Global Positioning System (GPS) or mechanical flaggers.

USER SAFETY RECOMMENDATIONS

Users should: Wash hands before eating, drinking, chewing gum, using tobacco or using the toilet. Remove clothing/PPE immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing. Remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

ENVIRONMENTAL HAZARDS

This product is potentially pathogenic to honey bees. Do not apply this product or allow it to drift to blooming crops or weeds while bees are foraging the treatment area. Do not apply directly to water, to areas where surface water is present or to intertidal areas below the mean high water mark. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. Do not contaminate water when disposing of equipment wash-waters or rinsate.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. For any requirements specific to your State or Tribe, consult the State or Tribal agency responsible for pesticide regulation.

AGRICULTURAL USE REQUIREMENTS

Use this product only in accordance with its labeling and with the Worker Protection Standard, 40 CFR Part 170. This Standard contains requirements for the protection of agricultural workers on farms, forests, nurseries, and greenhouses, and handlers of agricultural pesticides. It contains requirements for training, decontamination, notification, and emergency assistance. It also contains specific instructions and exceptions

pertaining to the statements on this label about personal protective equipment (PPE) and restricted-entry interval. The requirements in this box apply only to uses of this product that are covered by the Worker Protection Standard.

Do not enter or allow worker entry into treated areas during the restricted entry interval (REI) of 48 hours unless wearing the appropriate personal protective equipment.

PPE required for early entry to treated areas (that is permitted under the Worker Protection Standard and that involves contact with anything that has been treated, such as plants, soil, or water). is:

- Coveralls;
- Shoes plus socks, and;
- Chemical resistant gloves (nitrile or barrier laminate)
- Protective eyewear

PRODUCT INFORMATION

XPULSE contains two active ingredients: live spores of the naturally occurring fungus, *Beauveria bassiana* Strain GHA, and cold pressed neem oil. Live spores and cold pressed neem oil can be harmed by storage at high temperatures or contact with water for more than 24 hours. See STORAGE AND DISPOSAL instructions on the container label.

For use in in Field, Agronomic, Vegetable and Orchard Crops and in commercial greenhouses and nurseries to control Whitefly, Aphids, Thrips, Scales, Leafminers, Leafhoppers, Plant Bugs and other leaf-feeding insects listed on the label

This product can be aerially applied and is suitable for use with ultra-low volume application equipment.

MODE OF ACTION AND APPLICATION TIMING

XPULSE acts by contact. Spores attach to the insect, germinate and penetrate through the insect cuticle. The fungus then grows rapidly within the insect, causing mortality. Cold pressed neem oil has demonstrated properties as an insect repellent, insect growth regulator, and insecticide. It is a mixture of several C₂₆ terpenoids that are naturally occurring organic compounds composed of a five-carbon skeleton (simple terpenoids) or complex terpenoids with structures that possess between 20 and 40 carbon atoms. Azadirachtin, the most common terpenoid in cold pressed Neem extract and the most thoroughly characterized.

Begin treatment of crops at the first appearance of the insect pest. Typically, it takes 2-5 days after the first spray to see control. Application rates, frequency, spray coverage and insect numbers impact the speed at which acceptable control is achieved. XPULSE is most effective when used early, before high insect populations develop. Reapply as necessary under a pest management program that includes close scouting.

USE DIRECTIONS

IMPORTANT: To avoid possible harm to honey bees, do not apply in the early morning or late evening hours.

USED ALONE: Apply up to 2 quarts of XPULSE in 100 gallons of water per acre for thorough coverage. For aerial applications, apply at the rate of up to 1 quart per acre in a minimum of 5 gallons of water. Mix only enough for immediate use. Begin spraying when the insects first appear. Do not wait until the plants are heavily infested.

USED AS A TANK MIX: This product can be tank mixed with other insecticides, fungicides, adjuvants and wetting agents. This application must conform to accepted use precautions and directions for both products. Tank mix applications must be made in accordance with the more restrictive of label limitations and precautions. Do not exceed label application rates. This product cannot be mixed with any product with label

prohibitions against such mixing. Prior to tank mixing, conduct a compatibility test using the proper proportions of products and water to ensure the physical compatibility of the mixture.

IMPORTANT NOTE: Plant safety is an important consideration when using insecticides in a greenhouse. However, it is not possible to evaluate the phytotoxicity of XPULSE on numerous plant varieties that may react differently to insecticides in different growth stages or under varying environmental conditions. Before making widespread applications of XPULSE, or tank mix combinations, treat a limited number of plants and observe for phytotoxicity over a 10-day period.

FOR THE CONTROL OF INSECTS AT VARIOUS LIFE STAGES, INCLUDING:

WHITEFLY: Greenhouse Whitefly, Silverleaf Whitefly, Sweet Potato Whitefly (aka Tobacco Whitefly), Banded-winged Whitefly, Cassava Whitefly, Citrus Blackfly, Citrus Whitefly, Giant Whitefly

APHIDS: Bean Aphid, Cabbage Aphid, Cowpea Aphid, Green Peach Aphid, Greenbug, Hop Aphid, Melon/Cotton Aphid, Pea Aphid, Potato Aphid, Rose Aphid, Russian Wheat Aphid, Spotted Alfalfa Aphid

THRIPS: Greenhouse Thrips, Cuban Laurel Thrips, Pear Thrips, Potato/Onion Thrips, *Thrips palmi*, Western Flower Thrips

LEAFMINERS: Holly Leafminer, Serpentine Leafminer, Vegetable Leafminer

SCALES: California Red Scale, Yellow Scale, Coffee Green Scale

LEAFHOPPERS AND PLANTHOPPERS: Grape Leafhopper, Leafhoppers, Planthoppers, Potato Leafhopper, Rice Delphacid, Variegated Virginia Creeper Leafhopper, Brown Plant Hopper, Carolina Grasshopper, Leafhopper, Rice Brown Plant Hopper, Rice Grasshopper, Rice Green Leafhopper

FOLIAGE-FEEDING LEPIDOPTERA: Diamondback Moth, Cabbage Looper, Fall Army Worm, Imported Cabbage Worm

PLANT BUGS (HETEROPTERA): Chinch Bugs, Fleahoppers, Lace Bugs, Lygus Bug, Seed Bugs, Stink Bugs, Tarnished Plant Bug

CROPS ON WHICH XPULSE CAN BE USED

GROWING CROPS (OUTDOORS AND IN COMMERCIAL GREENHOUSES):

ROOT AND TUBER VEGETABLES: Including: Arracacha, Arrowroot, Purple Arrowroot, Japanese Artichoke, Jerusalem Artichoke, Garden Beets, Sugar Beets, Edible Burdock, Edible Canna, Carrots, Cassava (bitter or sweet), Celeriac (celery root), Chayote (root), Chervil (turnip rooted), Chicory, Chufa, Dasheen, Ginger, Ginseng, Horseradish, Leren, Parsley (turnip rooted), Parsnip, Potato, Radish, Japanese Radish (Daikon), Rutabaga, Salsify, Black Salsify, Spanish Salsify, Sweet Potato, Tanier, Turmeric, Turnip, Yam (true), Yam Bean.

LEAVES OF ROOT AND TUBER VEGETABLES: Including: Garden Beet, Sugar Beet, Edible Burdock, Carrot, Cassava (bitter or sweet), Celeriac (celery root), Chervil (turnip rooted), Chicory, Dasheen (taro), Parsnip, Radish, Japanese Radish (Daikon), Rutabaga, Black Salsify, Sweet Potato, Tanier, Turnip, Yam (true).

BULB VEGETABLES: Including: Garlic, Great-headed Garlic, Leek, Onion (bulb and green), Welch, Shallot.

LEAFY VEGETABLES: Including: Amaranth (leafy amaranth, Chinese spinach, tampala), Arugula, Cardoon, Celery, Chinese Celery, Celtuce, Chervil, Cilantro, Corn Salad, Chrysanthemum (edible-leaved), Chrysanthemum (garland), Cress (garden, water), Upland Cress (yellow rocket, winter cress), Dandelion, Dock (sorrel), Endive (escarole), Fennel (Florence), Lettuce (head and leafy), Orach, Parsley, Purslane (garden and winter), Radicchio, Rhubarb, Spinach, Fine Spinach (Malabar, Ceylon), Spinach (New Zealand), Swiss Chard.

BRASSICA (COLE) LEAFY VEGETABLES: Including: Broccoli, Chinese Broccoli (Gai Lan), Broccoli Raab (Rapini), Brussels Sprouts, Cabbage, Chinese Cabbage (Bok Choy), Chinese Cabbage (Napa), Chinese Mustard Cabbage (Gai Choy), Cauliflower, Cavalo Broccolo, Collards, Kale, Kohlrabi, Mizuna, Mustard Greens, Mustard Spinach, Rape Greens.

LEGUME VEGETABLES (SUCCULENT OR DRIED): Including: Adzuki Beans, Field Beans, Kidney Beans, Lima Beans, Moth Beans, Mung Beans, Navy Beans, Pinto Beans, Rice Beans, Runner Beans, Snap Beans, Tepary Beans, Urd Beans, Wax Beans, Asparagus Beans, Black-eyed Peas, Catjang, Chinese Longbeans, Cowpeas, Crowder Peas, Southern Peas, Yard-Longbeans, Broad Beans (fava beans), Chick Peas (garbanzo beans), Guar, Jackbean (sword bean), Lablab Bean (hyacinth bean), Lentils, Peas (garden peas, field peas, sugar snap peas, English pea, snow pea), Pigeon Peas, Soybeans, Sweet Lupin Beans, White Lupin Beans, White Sweet Lupin, Sword Bean.

FOLIAGE OF LEGUME VEGETABLES: Including: Plant part of any legume vegetable included in the legume vegetable group that will be used as animal feed including any variety of Beans, Field Peas, Soybeans.

FRUITING VEGETABLES: Including: Eggplant, Ground Cherry, Okra, Pepinos, Pepper (bell pepper, chili pepper, cooking peppers, pimentos, sweet peppers), Tomatillo, Tomatoes.

CUCURBIT VEGETABLES: Including: Balsam Apple, Balsam Pear (bitter melon), Chayote (fruit), Chinese Waxgourd (Chinese preserving melon), Chinese Cucumber, Citron Melon, Cucumber, Gherkin, Edible Gourds, Melons (including hybrids, cantaloupe, casaba, crenshaw, golden pershaw melon, honeydew melons, honey balls, mango melon, muskmelon, Persian melon, pineapple melon, Santa Claus melon, snake melon), Pumpkin, Squash (summer and winter), Watermelon (including hybrids).

CITRUS FRUITS: Including: Calamondin, Citrus Citron, Citrus Hybrids, Grapefruit, Kumquats, Lemons, Limes, Mandarin (tangerine), Orange (sweet and sour), Pummelo, Satsuma Mandarin, (Citrus spp. includes chironja, tangelos, tangors).

POME FRUITS: Including: Apple, Crabapple, Loquat, Pear, Mayhaw, Oriental Pear, Quince.

STONE FRUITS: Including: Apricot, Cherry (sweet and sour), Nectarine, Peach, Plum, Prune, Chickasaw Plum, Damson Plum, Japanese Plum, Plumcot.

SMALL FRUITS AND BERRIES: Including: Blackberry, Blueberry, Cranberry, Currant, Dewberry, Elderberry, Gooseberry, Grape, Huckleberry, Loganberry, Olallie Berry, Raspberry (black and red), Strawberry, Youngberry.

TREE NUTS: Including: Almond, Beech Nut, Brazil Nut, Butternut, Cashew, Chestnut, Chinquapin, Filbert (hazelnut), Hickory nut, Macadamia Nut (bush nut), Pecan, Pistachio, Walnut, Black and English (Persian).

ORIENTAL VEGETABLES: Including: Acerola, Atemoya, Balsam Pear (bitter melon), Carambola, Japanese Artichoke, Chinese Broccoli (Gai Lan), Chinese Cabbage (Bok Choy, Napa), Chinese Mustard Cabbage (Gai Choy), Dasheen, Ginger, Ginseng, Chinese Longbeans, Mung Beans, Citron Melon, Japanese Radish (Daikon), Chinese Spinach, Chinese Waxgourd, Cilantro, Citron Melon, Rambutan, Water Chestnut.

SUBTROPICAL FRUITS: Including: Avocado, Banana, Carob, Barbados Cherry, Cherimoya, Dates, Durian (jackfruit), Feijoa, Figs, Guava, Kiwifruit, Lychee, Mango, Papaya, Passion Fruit, Persimmon, Pineapple, Pomegranate.

CEREAL GRAINS: Including: Barley, Buckwheat, Corn (sweet and field), Millet, Proso, Oats, Pearl Millet, Popcorn, Rice, Rye, Sorghum (Milo), Teosine, Triticale, Wheat, Wild Rice.

FORAGE, FODDER AND STRAW OF CEREAL GRAINS: Including: Barley, Buckwheat, Corn (sweet and field), Millet, Proso, Oats, Pearl, Popcorn, Rice, Rye, Sorghum (milo), Teosine, Triticale, Wheat, Wild Rice.

GRASSES FOR SEED, FORAGE, FODDER AND HAY: Including: any Grass (Gramineal family, green or cured, except sugarcane and those listed in the cereal grains group), that will be fed to or grazed by livestock, all Pasture and Range Grasses and Grasses grown for hay and silage, Bermuda Grass, Bluegrass, Bromegrass, Fescue.

NON-GRASS ANIMAL FEEDS: Including: Alfalfa, Velvet Bean, Clover, Kudzu, Lespedeza, Lupine, Sainfoin, Trefoil, Crown Vetch, Milk Vetch.

HERBS AND SPICES: Including: Allspice, Angelica, Anise (anise seed), Anise (star), Annatto (seed), Balm (lemon balm), Basil, Borage, Burnet, Camomile, Caper buds, Caraway, Caraway (black), Cardamom, Cassia bark, Cassia buds, Catnip, Celery seed, Chervil (dried), Chicory, Chive, Chive (Chinese), Cinnamon, Clary, Clove buds, Coriander (cilantro or Chinese parsley) (leaf), Coriander (cilantro) (seed), Costmary, Culantro (leaf), Culantro (seed), Cumin, Curry (leaf), Dill (dillweed), Dill (seed), Fennel (common), Fennel (Florence) (seed), Fenugreek, Grains of Paradise, Horehound, Hyssop, Juniper Berry, Lavender, Lemongrass, Lovage (leaf), Lovage (seed), Mace, Marigold, Marjoram (includes sweet or annual marjoram, wild marjoram or oregano and pot marjoram), Mustard (seed), Nasturtium, Nutmeg, Oregano, Mint, Paprika, Parsley (dried), Pennyroyal, Pepper (black), Pepper (white), Poppy (seed), Rosemary, Rue, Saffron, Sage, Savory (summer and winter), Sweet bay (bay leaf), Tansy, Tarragon, Thyme, Vanilla, Wintergreen, Woodruff, Wormwood.

ADDITIONAL PLANTS: Including: Artichoke, Asparagus, Avocado, Coffee, Cotton, Hops, Jojoba, Mushroom, Okra, Olives, Peanuts, Pineapple, Rice, Safflowers, Sesame, Sugar Cane, Sunflower, Tea, Tobacco.

MIXING AND APPLICATION

SHAKE WELL BEFORE USING. Apply XPULSE using hand-held, ground and/or aerial spray equipment; low-volume application equipment and chemigation (**follow specific directions for chemigation in this booklet**). XPULSE contains emulsifiers and mixes readily in water. Mix well by external mixing, in-tank mixing, or pump circulation to form an emulsion. To mix, fill spray tank with half the desired amount of water and start agitation. Shake XPULSE to suspend spores then with agitator running, slowly add desired quantity of XPULSE to spray tank. Add remainder of desired amount of water. Continue agitation throughout loading and spraying. Triple rinse empty XPULSE container with water and add rinse water to spray tank. For best results, continue agitation during spraying. Do not mix more XPULSE than needed for that day. Do not mix XPULSE the day before application. Spores will die if left overnight or longer in the spray tank.

DOSAGE RATE

Apply at a rate of up to 2 quarts of XPULSE per 100 gallons of spray volume. Mix well by external mixing, in-tank mixing, or pump circulation to form emulsion. **Most target insects can be controlled at a rate of 1 quart per 100 gallons of water, ½ quart per 50 gallons of water, 1 pint per 25 gallons of water. DO NOT WET PLANTS TO THE POINT OF RUN-OFF OR DRIP.**

Typical Application Rates/100 Gallons of Spray Volume

Whitefly, Aphids, Thrips,½ to 1 quart of XPULSE/100 gallons spray volume
Other labeled insects.....½ to 1 quart of XPULSE/100 gallons spray volume
depending on insect population and foliage density.

DOSAGE RATE FOR FIELD, AGRONOMIC AND VEGETABLE CROPS; RANGELAND AND IMPROVED PASTURES

Ground Application

Apply ¼ to 2 quarts XPULSE/acre. Apply sufficient water to thoroughly cover foliage infested with insects, typically 50 to 100 gallons of water per acre. Final spray volume can be up to 400 gallons per acre. Water volume depends on spray equipment, crop canopy and target pest. **SPRAY TO WET, BUT AVOID RUNOFF.**

Apply XPULSE up to a maximum of 2 quarts per acre for extreme insect pressure or dense foliage.

Aerial Application

Apply ¼ to 1 quart XPULSE/acre. Apply in sufficient water to thoroughly cover foliage infested with insects. For best results, apply in 5-10 gallons water per acre. Do not apply in less than 5 gallons water per acre. Do not apply when wind speed favors drift beyond the area intended for treatment.

Leaf-Feeding Lepidoptera

For use against diamondback moth, imported cabbage worm and cabbage looper; XPULSE can be used alone. Do not exceed label dosage rates. This product cannot be mixed with any product containing a label prohibition against such mixing.

Typical Application Rates/Acre

Diamondback moth½ to 1 quart of XPULSE/acre
Imported cabbage worm½ to 1 quart of XPULSE/acre
Cabbage looper 1 quart of XPULSE/acre

Leaf-Feeding Beetles

For use against Colorado potato beetle; XPULSE can be used alone to control Colorado potato beetle in accordance with the more restrictive of label limitations and precautions. Do not exceed label dosage rates. This product cannot be mixed with any product containing a label prohibition against such mixing.

APPLICATION FREQUENCY

Apply XPULSE at 5-10 day intervals. High insect populations, especially whitefly and aphids, may require application at 2-5 day intervals. Repeat applications for as long as pest pressure persists. There is no limit on the number of applications or total amount of XPULSE which can be applied in one season.

PLANT SAFETY

XPULSE has shown plant safety but has not been tested on all plant varieties or in all tank mixes. Use caution when making applications to open blooms, especially on varieties known to be sensitive. Test XPULSE on a small number of plants to check for potential damage before applying to larger number of plants. **Do not apply on poinsettias after bract formation.**

TANK MIX COMPATIBILITY

XPULSE is physically and biologically compatible with a wide range of insecticides and spray adjuvants. It is compatible with some fungicides in tank mixtures. Fungicides can kill the spores. Do not exceed label dosage rates.

Adjuvants XPULSE is designed for application without additional wetting agents and spreaders. Some wetting agents and spreaders kill the spores, the active ingredient in XPULSE, or contribute to poor mixing and spray problems.

Compatibility With Chemical Insecticides XPULSE is compatible with most chemical insecticides. However, some insecticide formulations can kill the fungal spores, part of the active ingredient in XPULSE. In all cases, pesticides must be used in accordance with their labels.

Compatibility With Fungicides XPULSE is compatible in tank mix with some fungicides.

DIRECTIONS FOR COMMERCIAL GREENHOUSE USE: Combine 8 fluid ounces (1/2 pint) to 32 fluid ounces (1 quart) with 30 gallons of water for applications with conventional hydraulic sprayers or 1 to 2 fluid ounces per gallon of water for applications with compressed sprayers.

DIRECTIONS FOR APPLICATION THROUGH IRRIGATION SYSTEMS

General Requirements -

- 1) Apply this product only through a sprinkler including center pivot, lateral move, end tow, side (wheel) roll, traveler, big gun, solid set or hand move irrigation systems. Do not apply this product through any other type of irrigation system.
- 2) Crop injury, lack of effectiveness, or illegal pesticide residues in the crop can result from non-uniform distribution of treated water.
- 3) If you have questions about calibration, you should contact State Extension Service specialists, equipment manufacturers or other experts.
- 4) Do not connect an irrigation system (including greenhouse systems) used for pesticide application to a public water system unless the pesticide label-prescribed safety devices for public water systems are in place.
- 5) A person knowledgeable of the chemigation system and responsible for its operation, or under the supervision of the responsible person, shall shut the system down and make necessary adjustments should the need arise.
- 6) Posting of areas to be chemigated is required when 1) any part of a treated area is within 300 feet of sensitive areas such as residential areas, labor camps, businesses, day care centers, hospitals, in-patient clinics, nursing homes or any public areas such as schools, parks, playgrounds, or other public facilities not including public roads, or 2) when the chemigated area is open to the public such as golf courses or retail greenhouses.
- 7) Posting must conform to the following requirements. Treated areas shall be posted with signs at all usual points of entry and along likely routes of approach from the listed sensitive areas. When there are no usual points of entry, signs must be posted in the corners of the treated areas and in any other location affording maximum visibility to sensitive areas. The printed side of the sign should face away from the treated area towards the sensitive area. The signs shall be printed in English. Signs must be posted prior to application and must remain posted until foliage has dried and soil surface water has disappeared. Signs may remain in place indefinitely as long as they are composed of materials to prevent deterioration and maintain legibility for the duration of the posting period.
- 8) All words shall consist of letters at least 2.5 inches tall, and all letters and the symbol shall be a color which sharply contrasts with their immediate background. At the top of the sign shall be the words KEEP OUT, followed by an octagonal stop sign symbol at least 8 inches in diameter containing the word STOP. Below the symbol shall be the words PESTICIDES IN IRRIGATION WATER.

Specific Requirements for Chemigation Systems Connected to Public Water Systems -

- 1) Public water system means a system for the provision to the public of piped water for human consumption if such system has at least 15 service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year.
- 2) Chemigation systems connected to public water systems must contain a functional, reduced-pressure zone, backflow preventer (RPZ) or the functional equivalent in the water supply line upstream from the point of pesticide introduction. As an option to the RPZ, the water from the public water system should be discharged into a reservoir tank prior to pesticide introduction. There shall be a complete physical break (air gap) between the outlet end of the fill pipe and the top or overflow rim of the reservoir tank of at least twice the inside diameter of the fill pipe.
- 3) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 4) The pesticide injection pipeline must contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.

- 5) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops, or in cases where there is no water pump, when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being fitted with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Specific Requirements for Sprinkler Chemigation -

- 1) The system must contain a functional check valve, vacuum relief valve and low-pressure drain appropriately located on the irrigation pipeline to prevent water source contamination from backflow.
- 2) The pesticide injection pipeline must contain a functional, automatic, quick-closing check valve to prevent the flow of fluid back toward the injection pump.
- 3) The pesticide injection pipeline must also contain a functional, normally closed, solenoid-operated valve located on the intake side of the injection pump and connected to the system interlock to prevent fluid from being withdrawn from the supply tank when the irrigation system is either automatically or manually shut down.
- 4) The system must contain functional interlocking controls to automatically shut off the pesticide injection pump when the water pump motor stops.
- 5) The irrigation line or water pump must include a functional pressure switch which will stop the water pump motor when the water pressure decreases to the point where pesticide distribution is adversely affected.
- 6) Systems must use a metering pump, such as a positive displacement injection pump (e.g., diaphragm pump) effectively designed and constructed of materials that are compatible with pesticides and capable of being filled with a system interlock.
- 7) Do not apply when wind speed favors drift beyond the area intended for treatment.

Application Instructions -

- 1) Remove scale, pesticide residues, and other foreign matter from the chemical supply tank and entire injector system. Flush with clean water. Failure to provide a clean tank, void of scale or residues may cause product to lose effectiveness or strength.
- 2) Constant agitation must be maintained in the chemical supply tank during the entire period of insecticide application. Greater accuracy in calibration and distribution will be achieved by injecting a larger volume of more dilute suspension per unit of time.

STORAGE AND DISPOSAL

Do not contaminate water, food, or feed by storage and disposal.

PESTICIDE STORAGE

Store in a cool, dry place. Avoid storage below freezing temperatures or above 85°F. XPULSE stability decreases with time at elevated temperatures above 85°F. Tightly reclose the container of unused product. Do not contaminate unused product with water.

PESTICIDE DISPOSAL

Pesticide wastes may be hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal Law. If these wastes cannot be disposed of according directions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste Representative at the nearest EPA Regional Office for guidance.

CONTAINER HANDLING

Nonrefillable container. Do not reuse or refill this container. Triple rinse container (or equivalent) promptly after emptying.

(For containers ≤5 gallons)

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank and drain for 10 seconds after the flow begins to drip. Fill the container ¼ full with water and recap. Shake for 10 seconds. Pour rinsate into application equipment or a mix tank or store rinsate for later use or disposal. Drain for 10 seconds after the flow begins to drip. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. In most states, burning is not allowed.

(For containers > 5 gallons)

Triple rinse as follows: Empty the remaining contents into application equipment or a mix tank. Fill the container ¼ full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring at least one complete revolution in each direction, with each revolution taking less than 30 seconds. ~~Then~~ Stand the container on its end and tip it back and forth several times. Turn the container over onto its other end (top) and tip it back and forth several times. Empty the rinsate into application equipment or a mix tank or store rinsate in a separate container for later disposal. Repeat this procedure two more times. Then offer for recycling if available or puncture and dispose of in a sanitary landfill, or by incineration. In most states, burning is not allowed. If rinsate cannot be used, follow pesticide disposal instructions. If not triple rinsed, these containers are acute hazardous wastes and must be disposed in accordance with local, state and federal regulations.

CONDITIONS OF SALE

XPULSE conforms to the description set forth on this label and is reasonably fit for the purposes described herein when used according to the label directions and specified conditions. The manufacturer disclaims any and all other express or implied warranties of merchantability and fitness for particular purpose. To the extent permitted by applicable law, buyers and users shall assume all risk and responsibility for potential loss or damage if this product is used, stored, handled or applied in a manner inconsistent with this labeling. To the extent permitted by applicable law, the manufacturer shall not be liable for more than the purchase price for the quantity involved including incidental, consequential or special damages.